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(54) Drainage tube

(57) In a flexible drainage tube such as a suction drainage tube, drainage apertures are provided in the side wall of the tube, their arrangement and/or configuration being such as to enhance the flexibility of the tube in their vicinity.

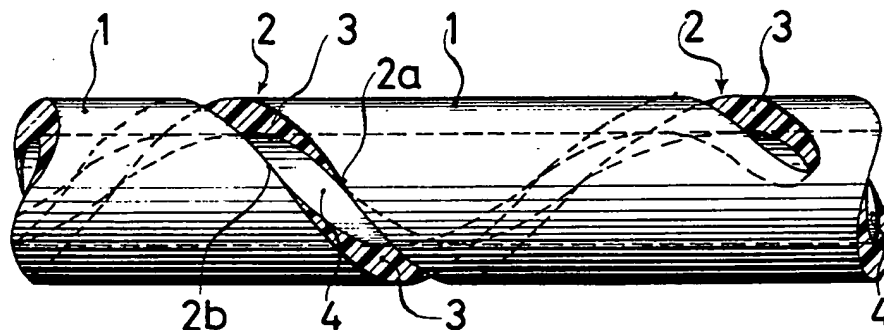


FIG. 1

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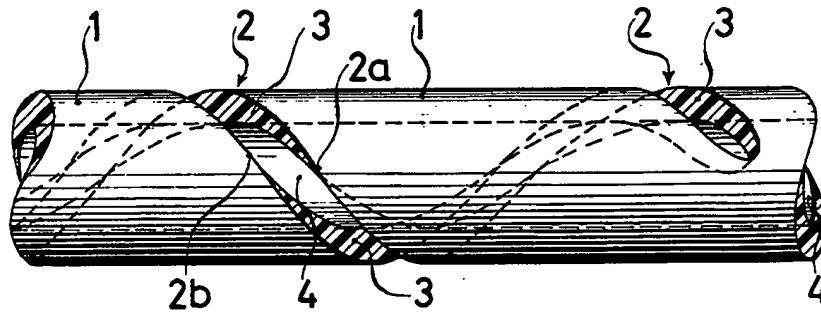
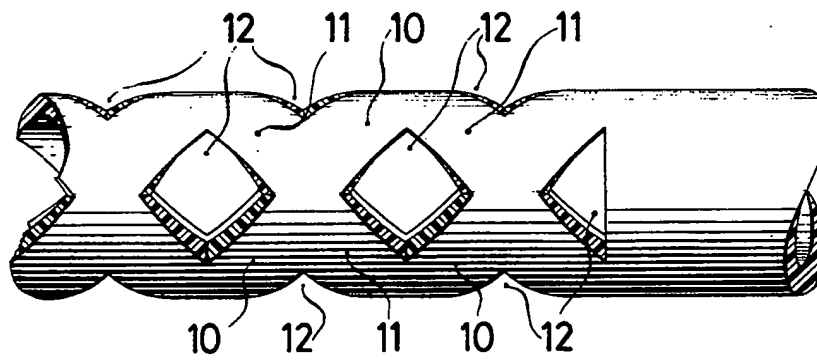


FIG. 1

FIG. 2



SPECIFICATION

Drainage tube

- 5 This invention relates to a drainage tube such as a suction drainage tube, for medical purposes, comprising a tube having a number of perforations in the tube in the region of one end of the tube.
- 10 Suction drainage tubes are generally made from polyvinyl chloride with an outside diameter of about 2.5 to 5 mm and a length of about 1 metre, one end of the tube having transverse bores of a diameter of about 2
- 15 mm. After the perforate end has been shortened to a suitable length, these suction drainage tubes are implanted into body and tissue cavities from which tissue fluid is to be drained. The suction applied is about 60 to
- 20 90 mm Hg, i.e. 8 to 12 kPa. This suction causes the body cavity tissue to be drawn against the wall of the suction drainage tube. After implantation, the amount of tissue fluid discharged fluctuates considerably and there
- 25 are times when there is practically no discharge of tissue fluid whatever. During such times the tissue fluid coagulates more intensively, and clogs not only a number of the perforations but also the interior of the tube.
- 30 If the tissue fluid discharge then increases subsequently, it cannot be drawn off properly. The invention seeks to provide a suction drainage tube with a reduced risk of obstruction and with which any obstruction occurring
- 35 can be readily removed.
- According to the invention, there is provided a drainage tube for medical purposes, commencing a tube having a number of perforations in the region of the tube end,
- 40 wherein tube wall is provided with one or more helical lands at its end and the perforations are arranged between the terms of the land(s).
- In one embodiment of the invention, a
- 45 single helical land is provided, between the individual helical turns of which a helical slot is formed as the perforation. If the implanted tube is turned slightly from beyond the implanted portion, the tube wall is fully rotated
- 50 as a result but the helical turns are rotated only partially. Depending upon the direction in which the tube is turned, the helical slot will be widened or constricted, and there will in every case be a relative displacement of the
- 55 edges of the helical slot. Any Coagulation is thus broken up. Another advantage of the helical slot is that the interior of the tube does not just have a round cross-section near the tube end, but is more in the form of a
- 60 keyhole. With this cross-section the adhesion forces occurring cannot take effect in the same way as with a purely round cross-section. There is therefore less coagulation from the outset.
- 65 In a second embodiment of the invention,

two intersecting helical lands are provided, between which diamond-shaped perforations are formed. In this embodiment, the perforations may make up about 50% of the tube

70 wall area. The proportion of lateral openings in this embodiment is particularly large so that there is little risk of obstruction. The edges of the perforations can be moved relatively to one another by pulling and turning, although

75 not to the same extent as in the first embodiment of the invention. The invention will now be described in greater detail, by way of example, with reference to the drawings in which:-

80 *Figure 1* is an enlarged view of the end of a suction drainage tube according to a first embodiment of the invention, and

Figure 2 shows the end of the suction drainage tube according to a second embodiment.

85 Fig. 1 is an enlarged view of a part of the end of the suction drainage tube. The latter consists of a tube of a length of about 1 metre, made from polyvinyl chloride or some

90 other suitable plastics material, and has an outside diameter of about 2.5 to 5 mm. The end of the tube is about 15 to 20 cm long and has a helical slot 2 which has some 8 to 10 turns, one of which is shown. The helical

95 slot 2 divides the wall of the tube so as to form a single helical land 1, the visible side surfaces of which are cross-hatched at 3. Although the tube interior 4 is cylindrical, it extends out through the helical slot 2, so that

100 any cross-section gives an approximately key-hole-shape, but the length of the narrow part of which is shortened. The helical slot 2 occupies some 25% of the wall area of the tube end.

105 If an external turning force is applied to the tube, a shearing force occurs in the land 1 and cannot be transmitted in the region of the slot 2. Consequently, the slot edges 2a, 2b move towards or away from one another depending upon the direction of rotation of the tube. Any obstruction occurring during implan-

110 tation is thus broken up so that the flow through the tube interior 4 is again guaranteed.

115 Fig. 2 shows another embodiment of a suction drainage tube, again in the form of a portion at the transition between the perforate end and the remaining part of the tube.

Diamond-shaped perforations 12 are provided and extend along helical lines, but leave lands 10 and 11 free along two intersecting helices. since a perforate tube end of this kind is relatively labile, the shape of the perforations 12 can be altered by pulling or turning the

120 tube, so that it is possible to break up any coagulation. Moreover, the risk of any obstruction occurring is reduced from the outset, because of the considerable breaks in the tube wall. Another important feature is that when

125 the suction drainage tube is removed, the

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diameter of the perforate end is slightly reduced so that this end of the tube can readily be withdrawn from the wound.

5 CLAIMS

1. A drainage tube for medical purposes, comprising a tube having a number of perforations in the region of the tube end, wherein tube wall is provided with one or more helical lands at its end and the perforations are arranged between the turns of the land(s).
2. A tube according to claim 1, wherein a single helical land is provided, between the individual helical turns of which a helical slot is formed as the perforation.
3. A tube according to claim 2, wherein the helical land is about 8 to 10 mm wide and the helical slot is about 0.8 to 2.5 mm wide.
4. A tube according to claim 1, wherein two intersecting helical lands are provided, between which diamond-shaped perforations are formed.
5. A suction drainage tube substantially as described herein with reference to the drawings.

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